REMARKS

In the Office Action, claims 1-4 and 7-21 were rejected. Claims 5 and 6 were indicated as allowable. All pending claims are believed to be clearly allowable. Reconsideration and allowance of all pending claims are requested.

Rejections Under 35 U.S.C. § 102

Independent claims 1 and 13 were rejected under 35 U.S.C. § 102(e) as being anticipated by Chen et al. (U.S. Patent 6,522,882, hereinafter "Chen"). Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. Applicants respectfully assert that the present invention, as recited in independent claims 1 and 13, is patentable over Chen.

The Examiner appears to have mischaracterized or misunderstood the applicant's arguments. Applicants summarize their position as follows:

Claim 1 recites a method for determining a location of an object within an area of interest that includes, among other things,

transmitting an RF signal from the object to at least three receivers;

transmitting a signal from at least one beacon transmitter to the at least three receivers, said at least one beacon transmitter being at a known location.

Similarly, claim 13 recites a system for determining a location of an object within an area of interest that includes, among other things,

a mobile device carried by said object, said mobile device including a transmitter for transmitting an RF signal;

at least one beacon transmitter at a known location for transmitting a beacon signal.

Claims 1 and 13 clearly state that an RF signal is transmitted from an object to at least three receivers, and another signal is transmitted from at least one beacon transmitter to

the at least three receivers. Applicants respectfully submit that the object and the beacon transmitter are two separate components. In addition, the beacon transmitter is at a known location. The system described by Chen is completely different, and even opposite to the invention in at least these two respects, as discussed below.

Furthermore, claim 1 recites:

"calculating, at each of the at least three receivers, time difference of arrival information based on the signal from said at least one beacon transmitter and the RF signal transmitted from the object; and

determining a location of the object within said area of interest based on said time difference of arrival information."

And claim 13 recites:

"at least three base stations within said area of interest, each of said at least three base stations comprising a detector for detecting the RF signal transmitted from said mobile device, and further comprising a processor for deriving time difference of arrival information based on the beacon signal and the RF signal; and

a controller for determining the location of the object within said area of interest based on the time difference of arrival information calculated by each of the three base stations."

It is clear that the time difference of arrival information (TDOA) is calculated at each of the at least three receivers. In addition, the calculation is based on *the signal from the at least one beacon transmitter and the RF signal transmitted from the object.* The location of the object is based on the calculated TDOA.

<u>Chen only teaches or suggests transmitting a beacon signal from a mobile transceiver to determine its location—the mobile transceiver, as the source of the beacon, is never in a known location.</u>

The Examiner seemed to argue that the transceiver of Chen can be in a known location. However, this is never the case in any embodiment or situation summarized by Chen. According to Chen,

> Each of the plurality of cell sites 14 defines a cell 20 within which the mobile transceiver 18 is likely to be in communication with that one of the plurality of cell sites 14. Nevertheless, when the mobile transceiver 18 is outside of the cell 20 defined by any of the plurality of cell sites 14, such cell sites 14 might still detect or even be in communication with the mobile transceiver 18. Chen, col. 5, lines 16-22.

It is clear from the above excerpt that the mobile transceiver 18 is in motion with respect to the cell sites 14. Therefore, the location of the mobile transceiver 18 is not known, and it is the location of the mobile transceiver 18 that is to be determined, as is made clear in the following excerpt of Chen:

> In particular, the configuration is well suited for supporting a method for locating the mobile transceiver 18 in a conversation state, where one of the plurality of cell sites 14 transmits to the mobile transceiver 18 a handoff signal for causing the transceiver to continually transmit a predetermined beacon signal, for example a shortened burst, without leaving the conversation state; at at least some of the plurality of cell sites 14, receiving the predetermined beacon signal and measuring the time at which the beacon signal was received; and calculating the location of the mobile transceiver 18 from the respective location of each of the receiving plurality of cell sites 14 and the respective times at which the beacon signal was received at each of the receiving plurality of cell sites 14 . Preferably, this calculation step is carried out at the mobile telephone switching office 12, being the common and controlling node of the mobile telephone system 10. Chen, col. 5, lines 37-53.

Moreover, it is the mobile transceiver 18 that transmits the beacon signal. As noted above, the mobile transceiver 18 is ***not*** in a known location. In such regard, the mobile transceiver 18 ***cannot*** qualify for a beacon transmitter, as recited in claim 1 of the present application.

Furthermore, Chen discloses that calculating the location of the mobile transceiver 18 is based on the respective location of each of the receiving cell sites 14 and the respective times at which the beacon signal was received at each of the receiving plurality of cell sites 14. It is also noted that the calculation is performed at the mobile telephone switching office 12, rather than the at least three receivers.

Chen only discloses the use of RF signals for telephony communication, and never for use in conjunction with a beacon signal for determining time difference of arrival for location of the transceiver.

The Examiner appears to overlook the requirement in the claims that both the beacon signal and the RF signals be used to determine the time difference of arrival. On the contrary, however, Chen never even suggests using RF signals for determination of time difference or arrival, or anything but essentially for telephony communication. According to Chen,

> The plurality of modems 94 are in communication with a multi-carrier radio transceiver 96. The radio transceiver 96 receives a plurality of radio frequency signals respectively modulated onto a plurality of carriers and provides such plurality of signals to respective ones of the plurality of modems 94. Similarly, the radio transceiver 96 receives a plurality of signals from respective ones of the plurality of modems 94 and modulates those signals into respective ones of the plurality of carriers. Chen, col. 7, lines 5-13.

Again, in column 8 of Chen:

> The wireless telephony module 138 has a circuit-side terminal 146 connected to the mobile I/O module 130 and a line-side terminal 148 connected to a radio transceiver 150. The wireless telephony module 138 and the radio transceiver 150 are conventional. Radio frequency signals received at the radio transceiver 150 are down converted to provide a baseband analog signal to the wireless telephony module 138 at its line-side terminal 148. The baseband analog signal is decoded at the wireless telephony module 138 and routed to the audio speaker 132 or the mobile microprocessor circuit 120 via the mobile I/O module 130. Similarly, voice signals from the microphone 134 and command signals from the keypad 136 and the mobile

> microprocessor circuit 120 are provided to the wireless telephony module 138 via the mobile I/O module 130. These voice and command signals are converted into baseband analog signals at the wireless telephony module 138 and passed to the radio transceiver 150 via the wireless telephony module line-side terminal 148 for modulation onto a radio frequency carrier. Chen, col. 8, lines 1-18.

It is clear from that Chen uses RF signals for telephony communication only. These RF signals are, however, not used together with the beacon signal, for calculating TDOA.

In view of at least the foregoing distinctions, a *prima facie* case of anticipation of claims 1 and 13 simply cannot be supported by Chen. Therefore, the present invention, as recited in independent claims 1 and 13 is not anticipated by Chen. Applicants respectfully request that the rejection of claims 1 and 13 under 35 U.S.C. §102(e) be withdrawn.

Rejections Under 35 U.S.C. § 103

Claims 2-4, 7-12 and 14-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Richards et al. (U.S. Patent 6,466,125, hereinafter "Richards").

The claims rejected under this section all depend directly or indirectly from independent claims 1 and 13 discussed above. The Richards reference is not believed to obviate the deficiencies of the Chen reference discussed above, particularly regarding the use of a beacon transmitter. Consequently, all of the dependent claims are believed to be patentable both by virtue of their dependency from an allowable base claim, as well as for the subject matter they separately recite. Reconsideration and allowance of all of the dependent claims on this basis are requested.

Conclusion

In view of the remarks set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help

speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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